

Linzer biol. Beitr.	37/1	185-193	25.7.2005
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**The first records of *Aleiodes* WESMAEL 1838
(Hymenoptera: Braconidae: Rogadinae).
The Fauna of Thrace Region of Turkey**

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A b s t r a c t : The study was carried out in spring, summer and autumn periods between 1986-2002 year in Turkish Thrace region from a total of 66 localities. 14 species were determined and all of them belonging to *Aleiodes* WESMAEL 1838, nine species are reported for the first time in the Turkish fauna. This research is the first faunistic study on Rogadinae (Hymenoptera: Braconidae) fauna of Turkey.

K e y w o r d s : *Aleiodes*, Fauna, Hymenoptera, Rogadinae, Thrace, Turkey.

Introduction

The Rogadinae (Hym.: Braconidae) is rather large and cosmopolitan subfamily. The rogadine braconid genus *Aleiodes* is worldwide in distribution, but is particularly species rich in the Holarctic region. The species of *Aleiodes* are koinobiont endoparasitoid of Lepidopteran larvae especially macrolepidoptera of Noctuidae and Geometroidae. The host caterpillar is mummified (SHAW 1997). The genus *Aleiodes* comprise 320 species and about 100 species in the Palaearctic (TOBIAS 1986).

The Nearctic *Aleiodes* species was revised by (MARSH & SHAW 1998, 2001; SHAW & MARSH 1999; SHAW et al. 1997, 1998a, 1998b) and The European species are begin revised by ACHTERBERG and SHAW. Mainly studies concerning *Aleiodes* species in Palaearctic Region have been carried out by (PAPP 1985a, 1985b, 1986, 1989a, 1989b, 1996; ACHTERBERG 1985; BELOKOBYLSKIY 1996). In additionally, a cladistic analysis of world species of *Aleiodes* was completed by (FORTIER & SHAW 1999).

Only five species of Rogadinae are recorded from Turkey (BEYARSLAN et al. 2002; ÖNCÜER 1991; SHENEFELT 1975). The faunistic study of the Rogadinae species of Turkey hasn't been carried out up to now. This research is the first faunistic study on Rogadinae fauna of Turkey.

The genus *Aleiodes* differs from other Rogadinae genera by having basal portion of tarsal claw rounded with a pecten of spines, tergite II carinate and anteromedial area with a polished triangular region that continues posteriad as a median carina, median carina of propodeum never forking in anterior half of the segment and never diverging posteromedially into an areola, fore wing RS+MB vein long, ovipositor sheath widened and flattened. The genus *Aleiodes* consists of 18 species-groups (FORTIER & SHAW 1999).

Our research area, Turkish Thrace (European part of Turkey), which is 23.485 km². 23 % of Turkish Thrace is covered by deciduous and scrophyllous forests. These forest are Istranca Mountain in the north east, Ganos and Koru Mountains in the south east. 20 % of our research area is meadow and 57 % is cultivated land.

Material and methods

Between 1986-2002, adult specimen of Rogadinae from 66 localities of Turkish Thrace were collected with net traps and light traps. A total samples are 253. Pertinent literature was used for determination of species (PAPP 1985a; TOBIAS 1986). Some species was determined by Dr S.A. Belokobylskij (Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia). Identified species of *Aleiodes* provided by Dr S.A. Belokobylskij and Dr J. Papp (Zoological Department, Hungarian Natural History Museum, Budapest, Hungary) were used as comparison materials.

References are used for known distributions of the species in the world (BELOKOBYLSKI 1996; BEYARSLAN et. al. 2002; PAPP 1985a, 1989b, 1996; PAPP & REZBANYAI-RESER 1997; SHENEFELT 1975; TOBIAS 1986). The research areas that collected of species is pointed on the map (Fig. 1). The diagnostic features and known hosts of species to were given in this paper.

The materials are deposited in the Collection of Biological Department of Trakya University, Edirne, Turkey (T.U.).

The following example denotes the information given for the material examined.

Edirne [1]- Hacıumur [2], 17.vii.1991 [3], 1 ♀ [4].

[1] Administrative district (province)

[2] Town or Village

[3] Collecting data (day/month/year)

[4] Number of specimens

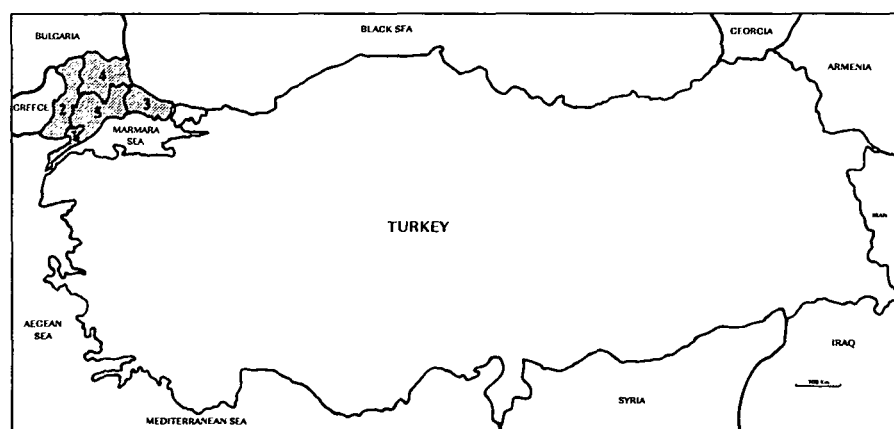


Fig. 1: Collecting sites in Turkey, from which *Aleiodes* have been recorded [Canakkale (1), Edirne (2), Istanbul (3), Kırklareli (4), Tekirdag (5)].

Results

Fourteen species of the genus *Aleiodes* were found to occur in Thrace region during this study.

Aleiodes WESMAEL 1838

The *A. gastritor* species-group

Aleiodes gastritor (THUNBERG 1822)

Diagnosis: Second radiomedial cell much longer than wide. Propodeum fine striate rugulose. Body brownish yellow. Stigma pale yellow. Legs yellowish brown.

Material examined: Edirne-Hacıumur (Light trap), 17.vi.1991, 1 ♀; Havsa-Abalar, 1.vii.1992, 1 ♀; Suakacağı, 1.ix.2001, 1 ♂; T.U. Gullapoğlu yerleşkesi, (Light trap), 16.ix.1999, 2 ♀ ♀, Keşan-Koru mountains (Light trap), 10.ix.1999, 4 ♂ ♂; Kırklareli-Lüleburgaz-Ceylanköy, 25.vii.2000, 1 ♀; Yeniceköy, 18.x.1999, 5 ♀ ♀, ♂.

General Distribution: Palaearctic regions, Korea.

Hosts: So far unknown.

New record for Turkey.

Aleiodes nocturnus (TELENGA 1941)

Diagnosis: First tergite conspicuously widening posteriorly, slightly temple shorter than wide at hind. Head in dorsal view transverse, 1.8-1.9 times broader than long. Ocelli large.

Material examined: Edirne-Uzunköprü-Saçlımüsellim, 1.viii.1992, ♀; Kırklareli-Atatürk Arş.Enstit., 21.viii.1992, ♀.

General Distribution: Hungary, Iran, Kazakhstan, Mongolia, Russia.

Hosts: Parasite of lepidopterans *Porthesia cargalica* M. (Lymantriidae), *Helicoverpa armigera* HB. (Noctuidae).

New record for Turkey.

The *A. circumscriptus* species-group

Aleiodes circumscriptus (NEES 1834)

Diagnosis: Head in dorsal view transverse, 1.8-2 times broader than long. r2 1.8-2 times longer than cuq1. Second radiomedial about two times than wide. Second tergite quadrate or somewhat longer than wide at hind. First tergite at most as long as wide at hind usually somewhat shorter. Propodeum fine closely rugose. Legs pale yellow.

Material examined: Canakkale-Eceabat-Kabatepe, 8.vi.2001, 1 ♂; Edirne-Güllapoğlu yerleşkesi (Light trap), 1.x.2001, 2 ♀ ♀; Hacıumur (Light trap), 23.vi.1991, 1 ♀; Süleoğlu, 29.vi.1992, 1 ♂; Kırklareli-İğneada, 27.vii.1986, 1 ♀; Pınarhisar-Sarpdere, 1.vi.1993, 1 ♀; Tekirdag-Uçmakdere, 8.ix.1999, 1 ♀.

General Distribution: Asia Minor, Caucasus, Europe, Faroes, Iran, Kazakhstan, Manchuria, Mongolia, Russia, Siberia, Turkey.

Hosts: Parasite of *Bupalus piniarius* L., *Hylaea fasciaria* L. (Geometridae), *Atolmis rubricollis* L. (Lithossidae), *Mythimna unipuncta* HW., *Mamestra brassicae* L., *Lithomoia scridaginis* HB., *Apamea crenata* HFN., *Orthosia incerta* HFN., *O. gracilis* D. & S. (Noctuidae), *Dioryctria abietella* D. & S. (Tortricidae).

The *A. pallidator* species-group

Aleiodes pallidator (THUNBERG 1822)

Diagnosis: Ocelli large, elliptic in form, distance between two hind ocelli at most half as long as diameter of an ocellus. First tergite somewhat longer than at hind. In lateral view eye large, only 1.4 times higher than wide, temple very narrow. Stigma vivid yellow. Propodeum very closely punctate and rugulose.

Material examined: Edirne-Suakacağı, 5.vii.1997, 1♀; Uzunköprü-Alınyazı, 30.vii.1992, 1♂; Tekirdag-Saray-Küçüksinekli, 25.viii.1992, ♀.

General Distribution: Afghanistan, Europe, Mongolia, Caucasus, Central Asia, Korea, Pacific Coastal Region, Russia, Turkey.

Hosts: Parasite of lepidopterans *Anarsia lineatella* Z. (Gelechiidae), *Cyclophora quercimontaria* BAST., *C. punctaria* L., *C. pendularia* CL., *Hylaea fasciaria* L., *Bupalus piniarius* L., *Dyscia conspersia* D. & S. (Geometridae), *Leucoma salicis* L., *Lymantria dispar* L., *Euproctis chrysorrhoea* L. (Lymantriidae), *Cosmotriche lunigera* ESP. (Lasiocampidae), *Spodoptera exiqua* HB., *Agrotis segetum* D. & S. (Noctuidae), *Psyche viciella* D. & S. (Psychidae), *Apotomis sororculana* ZETT. (Tortricidae).

The *A. coxalis* species-group

Aleiodes bicolor (SPINOLA 1808)

Diagnosis: Cu2 short, 2r only somewhat longer than cuq1 or r2 one-third to one-fourth shorter than d2. Tergite 1 distinctly broadening posteriorly. In dorsal view temple rounded. Propodeum roughly rugose. Stigma with brown to pale yellow basal spot.

Material examined: Edirne-Eskikadın, 26.vii.1992, 1♀; Havsa-Abalar, 1.viii.1992, 1♂; -Necatiye, 30.viii.1992, 1♂; Karahisar, 5.viii.1993, 1♀; Keşan-Koru mountains, 12.vi.1991, 1♀; Lalapaşa-Doğanköy, 1.ix.2001, 2♀♀; Meriç-Küçükaltıagaç, 30.vii.1992, 1♂; Sinanköy, 2.viii.2001, 1♀, 1♂; T.U Güllapoğlu yerleşkesi (Light trap), 16.ix.1999, ♀, 2♂♂; Uzunbayır, 5.vii.1997, 1♂; Uzunköprü-Çalıköy, 30.ix.1992, 2♂♂; Vaysal, 30.ix.1992, 2♂♂; -Omeroba, 2.viii.2001, ♀; İstanbul-Çatalca-Aydınlı, 25.viii.1992, 1♂; Karamandere, 25.vi.1993, ♀; Kırklareli-Atatürk Arş. Enstit., 21.viii.1992, 1♂; 23.vii.2000, 2♂♂; Dereköy, 23.vii.2000, 2♀♀; İnce-Paşayeri 2.viii.2000, 1♀; Kayalı, 18.viii.1996, 2♀♀, 1♂; 20.viii.1987, ♀; Kofcaz-Erikler, 2.viii.2000, 2♀♀; Lüleburgaz-Ceylanköy, 25.vii.2000, 1♀; -Sarmısaklı farm, 18.viii.1991, 1♀; -Türkgeldi farm, 13.viii.1992, 2♀♀, 1♂; -Ürünli, 22.viii.1992, 1♂; Pınarhisar-Erenler, 25.vii.2000, 2♀♀, 3♂♂; Tekirdag-Banarlı, 9.vi.2001, 1♀; Hayrabolu, 26.viii.1992, 1♀; 25.vii.2000, 2♀♀; Işıklar, 6.viii.1991, 2♀, 1♂; 20.vi.1997, 2♂♂; 23.viii.2000, 1♂; Malkara, 26.vii.2000, 1♀; Muratlı, 26.viii.1992, 1♀; 23.viii.2000, ♀; Naipköy (Light trap), 7.ix.1999,

1 ♀; 8.ix.1999, 1 ♂; 23.viii.2000, 1 ♂; Saray, 25.viii.1992, 1 ♂; Küçüksinekli, 3.ix.1992, 1 ♂; Şarköy-Güzelköy, 8.ix.1999, 1 ♂; Yazırköy, 23.viii.2000, 1 ♀, 1 ♂.

General Distribution: Afghanistan, China, Ciscaucasia, Europe, Iran, Korea, Libya, Mongolia, Transcaucasia, Tunisia, Turkey.

Hosts: Parasite of lepidopterans *Archiearis parthenias* L. (Geometridae), *Dascyhira albodentata* BREM. (Lymantridae), *Polyommatus icarus* ROTT., *P. eros* OCHS. (Lycaenidae), *Apamea sordens* HFN. (Noctuidae), *Nymphalis urticae* L. (Nymphalidae), *Pterophorus monodactylus* L., *Leioptilus tephradactylus* HB. (Pterophoridae), *Hyphonephele jurtina* L. (Satyridae), *Zygaena filipendulae* L., *Z. meliloti* ESP., *Procris pruni* D. & S. (Zygaenidae).

Aleiodes signatus (NEES 1812)

Diagnosis: Pair of spur of hind tibia usually one-third to one fourth as long as basitarsus, however, frequently nearly half as long as basitarsus. First tergite less broadening behind; second tergite transverse, 1.5 times wider behind than long.

Material examined: Edirne-Hadımağa, 28.v.1993, 1 ♀; Istanbul-Sarıyer-Kısırmandıra, 25.vi.1993, 1 ♀; Kırklareli-Demirköy-Beğendik, 2.vi.1993, 1 ♂; Tekirdağ-Işıklar, 23.ix.2001, 1 ♀.

General Distribution: Palearctic regions.

Hosts: Parasite of lepidopterans *Arctia caja* L., *A. villica* L., *Ocnogyna boeticum* Rbr., *Coscinia cribrum* L. (Arctiidae), *Philudoria potatoria* L., (Lasiocampidae), *Orgyia antiqua* L., *O. gonostigma* L., *Gynaephora sclenitica* ESP., *Euproctis chrysorrhoea* L., *E. similis* FÜ. (Lymantridae), *Autographa gamma* L., *Noctua fimbriata* SCH., *N. pronuba* L., *Acronicta psi* L. (Noctuidae), *Thaumetopoea processionea* L. *T. pityocampa* D. & S. (Thaumetopoeidae), *Spilonota ocellana* F. (Tortricidae).

New record for Turkey.

The *A. apicalis* species-group

Aleiodes ductor (THUNBERG 1822)

Diagnosis: Second tergite, usually 1.6 times wider behind than long medially, its basal width distinctly greater than median length. Tergite 1-2 rugose, longitudinally rugose. Nervellus issuing from the middle or near to the middle of discoidal vein. Stigma dark brown. Propodeum roughly reticulate rugose.

Material examined: Canakkale-Eceabat-Kabatepe, 8.vi.2001, 1 ♂; Edirne-T.U Güllapoğlu yerleşkesi, 6.iv.2001, 1 ♂; 20.iv.2001, 1 ♀; 4.v.2001, 1 ♀; 27.v.2001, 1 ♀; 30.v.2001, 4 ♀ ♀, 4 ♂ ♂, 26.iv.2002, 2 ♀ ♀; Hacımur (Light trap), 17.vi.1991, 1 ♂; Hadımağa, 23.v.1993, 3 ♂ ♂; Havsa-Abalar, 1.viii.1992, 1 ♂; -Bakışlar, 5.vii.1997, 1 ♀; -Necatiye, 30.viii.1992, 1 ♂; Ipsala, 5.viii.1993, 2 ♀ ♀; Lalapaşa-Doğanköy, 4.v.1992, 2 ♀ ♀; 1.ix.2001, 12 ♀ ♀, 12 ♂ ♂; Hacıdanışment, 5.vii.1992, 1 ♂; Sinanköy, 20.viii.1992, 2 ♀ ♀; Meriç-Hasirciarnavut, 30.vii.1992, 1 ♂; Söğütölüdere, 29.v.1993, 3 ♀ ♀; Suakacağı, 1.ix.2001, 1 ♂; Süleçoğlu, 29.vi.1992, 2 ♀ ♀; Uzunköprü-Kırcasali, 1.viii.1992, 1 ♂; Kırklareli-Atatürk Arş.Enstit., 21.viii.1992, 2 ♀ ♀, 1 ♂; Dereköy, 23.vii.2000, 1 ♀, 1 ♂; Demirköy-Balaban, 23.vii.2000, 1 ♂; Demirköy-Boztaş, 6.vii.1997, 3 ♂ ♂; İnce-Paşayeri 2.viii.2000, 1 ♂; Kayalı, 20.viii.1987, 1 ♂; Kofcaz, 2.viii.2000, 3 ♀ ♀, 1 ♂; Kofcaz-Erikler, 2.viii.2000, 2 ♀ ♀, 3 ♂ ♂; Lüleburgaz-Türkgeldi, 17.ix.1994, 1 ♂;

Vize, 25.vii.2000, 1♂♂; Yenice, 6.vii.1997, 2♂♂; Tekirdag-Ganos mountain-Radar, 8.ix.1999, 2♀♀; Hayrabolu, 26.vii.2000, 2♀♀; Malkara-Kaşıkçı, 26.vii.1992, 1♀, 2♂♂; Muratlı-Hanoğlu, 26.viii.1992, 1♀; Naipköy, 7.viii.1999, 1♂; 23.viii.2000, 1♀, 1♂♂; Saray, 25.viii.1992, 1♂; -Küçüksinekli, 25.viii.1992, 2♀♀, 4♂♂; -Safaalan, 25.viii.1992, 1♂; Şarköy-Güzelköy, 24.viii.2000, 1♀, 1♂; Yazırköy, 23.viii.2000, 1♀.

General Distribution: Afghanistan, Algeria, Canary Islands, Caucasus, Egypt, Europe, Iran, Israel, Japan, Kazakhstan, Libya, Russia, Siberia, Syria, Turkmenia, Turkey.

Hosts: Parasite of lepidopterans *Philudoria potatoria* L. (Lasiocampidae), *Mamestra brassicae* L., *Autographa gamma* L., *Discestra trifolii* HFN. (Noctuidae).

Aleiodes grandis GIRAUD 1857

Diagnosis: 3-4 of maxillar palpi flattened and thickened, third join at least twice broader than 5th join. Temple in dorsal view constricted. Ocelli large and near to each other. First tergite somewhat shorter than its hind width. Cu2 short, 2r about as long as cuqul. Propodeum closely rugose. Stigma brown. Tergite III punctate.

Material examined: Tekirdag-Hayrabolu, 9.vi.2001, 2♂♂.

General Distribution: Ciscaucasia, Europe (Except the northern countries), Russia.

Hosts: Parasite of lepidopterans *Amphipyra pyramidea* L. (Noctuidae).

New record for Turkey.

Aleiodes dimidiatus (SPINOLA 1808)

Diagnosis: Head in dorsal view slightly more transverse 1.9 times broader than long. Eye less protruding from outline of head. Ocelli relatively small, distance between ocelli more or less distinctly longer than the greatest diameter of an ocellus. Second tergite usually less transversa, 1.4-1.5 times broader than long medially. First tergite less quadrate, 1.4-1.3 times wider at hind than its width between spiracles.

Material examined: Canakkale-Eceabat-Kabatepe, 7.vi.2001, 5♂♂; Kavakköy, 8.vi.2001, 1♂; Edime-Keşan-Koru mountains, 12.vi.1991, 2♂♂; Lalapaşa-Doğanköy, 1.ix.2001, 1♀; Sinanköy, 2.viii.2001, 1♀; Kırklareli-Babaeski-Alpullu, 18.vi.1993, 1♂; Dereköy, 23.vii.2000, 11♀♀; Tekirdag-Işıklar, 24.viii.2000, 2♀♀; Malkara-Çınarlıdere, 26.vii.2000, 1♂; Muratlı, 7.9.1999, 1♂; 23.viii.2000, 1♂; -Hanoğlu, 9.vi.2001, 1♂; Naipköy 23.vii.2000, 2♀♀; Saray, 25.viii.1992, 1♂; Şarköy, 7.viii.1991, 1♂; -Güzelköy, 24.viii.2000, 1♀, 1♂; Yazırköy, 23.viii.2000, 2♀♀.

General Distribution: Algeria, Europe, Kamchatka, Kazakhstan, Korea, Manchuria, Mongolia, Morocco, Russia, Transcaucasia, Turkey.

Hosts: Parasite of lepidopterans *Arctia caja* L. *Diacrisia sannio* L., *Phragmatobia rupicola* GR. (Arctiidae), *Philudoria potatoria* L., *Lasiocampa quercus* L., *Macrothylacia rubi* L. (Lasiocampidae), *Orgyia antiqua* L., *O. dubia* Ta. (Lymntriidae), *Agrotis segetum* D. & S., *A. vestigalis* H., *A. clavis* H., *A. exclamationis* L., *Euxoa tritici* L., *E. temera* H., *Helicoverpa armigera* H., *Cosmia subtilis* St., *Haplodrina alsines* BR., *H. blanda* D. & S., *Caradrina morpheus* HFN., *Apamea anceps* D. & S., *Cerapteryx graminis* L. (Noctuidae), *Thaumetopoea processionea* L. (Thaumetopoeidae).

The *A. praetor* species-group

***Aleiodes praetor* (REINHARD 1863)**

D i a g n o s i s : Cheek as long as half height of eye. Third tergite hardly shorter second tergite, latter 1.3 -1.4 times wider behind than long medially.

M a t e r i a l e x a m i n e d : Tekirdag-Naipköy, 23.viii.2000, 2 ♀ ♀.

G e n e r a l D i s t r i b u t i o n : Palaearctic regions.

H o s t s : Parasite of lepidopterans *Euproctis chrysorrhoea* L. (Lymantriidae), *Loathoe populi* L., *Smerinthus ocellatus* L., *Sphinx pinastri* L., *Dilina tilae* L. (Sphingidae).

New record for Turkey.

The *A. pulchripes* species-group

***Aleiodes caucasicus* TOBIAS 1976**

D i a g n o s i s : Antenna about 40 segmented, basal part of flagellum light colored, apex black. Third tergite rugose punctate, in apical part somewhat smooth. Sides of mesothorax weakly punctate.

M a t e r i a l e x a m i n e d : Kırklareli-Balaban-Velika, 26.v.2002, 1 ♀.

G e n e r a l D i s t r i b u t i o n : Russia.

H o s t s : So far unknown.

New record for Turkey.

The *A. gasterator* species-group

***Aleiodes gasterator* (JURINE 1907)**

D i a g n o s i s : Head in dorsal view slightly less transverse, 1.8 times broader than long. Eye more protruding from outline of head. Ocelli relatively large, distance between ocelli shorter than to equalling the greatest diameter of an ocellus. Second tergite usually more transverse 1.6-1.7 times broader behind than long medially. First tergite more quadrate.

M a t e r i a l e x a m i n e d : Edirne-Uzunköprü-Balaban, 30.vii.1992, 2 ♀ ♀; Tekirdag-Saray-Küçüksinekli, 25.viii.1992, 1 ♀.

G e n e r a l D i s t r i b u t i o n : Europe, Caucasus, Mongolia, Russia, Siberia.

H o s t s : Parasite of lepidopterans *Euproctis chryorrhoea* L. (Lymantridae), *Autographa gamma* L. (Noctuidae).

New record for Turkey.

***Aleiodes rufipes* (THOMSON 1891)**

D i a g n o s i s : Antenna with 50-60 joints. Proximal 10-15 joints of flagellum cubic. First tergite slightly longer than wide at hind, its two sides moderately and evenly broadening posteriorly.

Material examined: Tekirdag-Naipköy (Light trap), 23.viii.2000, 2 ♀♀.

General Distribution: Finland, China, European part of Russia, Hungary, Sweden, Ukraine.

Hosts: So far unknown.

New record for Turkey.

The *A. melanopterus* species-group

***Aleiodes venustulus* (KOKOUJEV 1905)**

Diagnosis: Height of face half its width, oral cavity 1.5 times as wide as its distance from eye. Antennal segments slightly longer than wide.

Material examined: Edirne-Havsa-Bakışlar, 5.vii.1992, 1 ♂; Kırklareli-Babaeski-Taşagül, 18.vi.1993, 1 ♀, 1 ♂.

General Distribution: Central Asia, Kazakhstan, Russia.

Hosts: So far unknown.

New record for Turkey.

Zusammenfassung

Vorliegende Studie wurde im Zeitraum 1986-2002 zwischen Frühling und Herbst an 66 Orten des thrakischen Teiles der Türkei durchgeführt. 14 Arten der Gattung *Aleiodes* WESMAEL 1838 konnten nachgewiesen werden, 9 davon stellen Neufunde für die Türkei dar. Diese Untersuchung ist die erste Erforschung der Rogadinae-Fauna (Hymenoptera: Braconidae) der Türkei.

Acknowledgments

We would like to thank Dr J. Papp (Zoological Department, Hungarian Natural History Museum, Budapest, Hungary) for his valuable help. This research was supported by the Trakya University Scientific Research Project, (TUBAP-339).

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